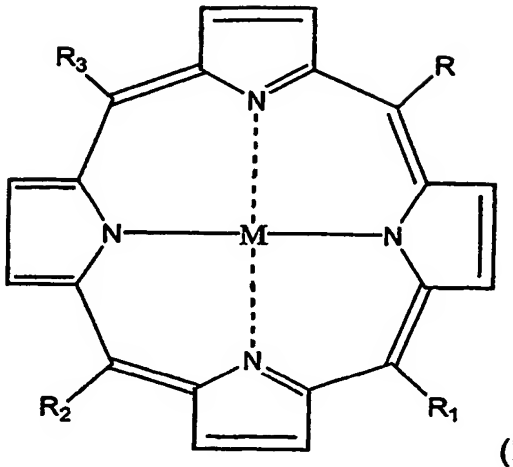
CLAIMS

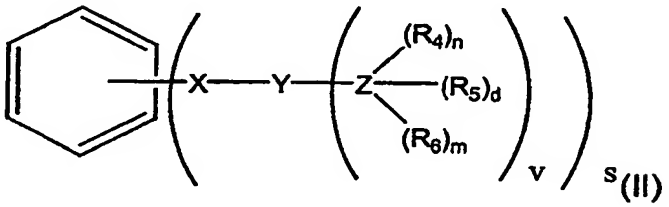
1. Compounds of general formula (I)



(I)

wherein

R is the following group of formula (II)



(II)

wherein

X is selected from the group consisting of O, S, CH_2, COO, CH_2CO, $O(CH_2)_2O$, $O(CH_2)_3O$ and N;

Z is selected from between N and CH_2N;

Y is selected from aliphatic groups, linear or branched, saturated or unsaturated, having from 1 to 10 carbon atoms, and phenyl, possibly substituted, or Y forms with Z a saturated or unsaturated heterocycle, possibly substituted, comprising up to two heteroatoms selected from the group consisting of N, O and S;

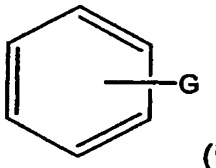
R_4 and R_5, equal or different from each other, are selected from H and alkyl groups having from 1 to 3 carbon atoms, or they form with the Z group a saturated or unsaturated heterocycle, possibly substituted, comprising up to two heteroatoms selected from the group consisting of N, O and S;

R_6 is selected from H and aliphatic groups, linear or branched, saturated or unsaturated, having from 1 to 5 carbon atoms, possibly substituted with alkylamine or alkylammonium groups having alkyl chains comprising from 1 to 5 carbon atoms, or forming a saturated heterocycle comprising up to two heteroatoms selected from between O and N;

d, m, and n, equal of different from each other, are selected from 0 and 1;

v and s, equal or different from each other, are integers comprised between 1 and 3;

R_1 is selected from H and a group of formula (III)



(III)

wherein

G is selected from H and P- $(CH_2)_l$ - $(W)_f$ - J, wherein

P is selected from the group consisting of O, CH_2, CO_2, NHCONH and CONH;

l is an integer comprised between 0 and 5;

W is selected from the group consisting of O, CO_2, CONH and NHCONH;

f is selected from between 0 and 1;

J is H or an alkyl group $(CH_2)_q$-CH_3, wherein q is an integer comprised between 0 and 20;

R_2 and R_3, equal or different from each other, are selected from between R and R_1, wherein R and R_1 are defined as above,

M is chosen from 2H and a metal selected from the group consisting of Zn, Mg, Pt, Pd, $Si(OR_7)_2$, $Ge(OR_7)_2$ and $AlOR_7$, wherein R_7 is chosen from between H and C1-C15 alkyl,

and pharmaceutically acceptable salts thereof,

with the exception of the following compounds:

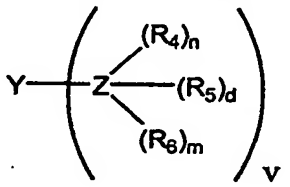
a) compound of formula (I) wherein M is 2H, $R_1 = R_3 = H$, $R = R_2$ is a group of formula (II) in which s is 1, X is O, Y is $(CH_2)_3$, v is 1, Z is N, n = d = 1, m is 0, and $R_4 = R_5 = H$; and

b) compound of formula (I) wherein M is 2H, $R_1 = R_3 = H$, $R = R_2$ is a group of formula (II) in which s is 1, X is O, Y is $(CH_2)_3$, v is 1, Z is N, n = d = 1, m is 0, R_4 and R_5 form with Z a phthalimido group.

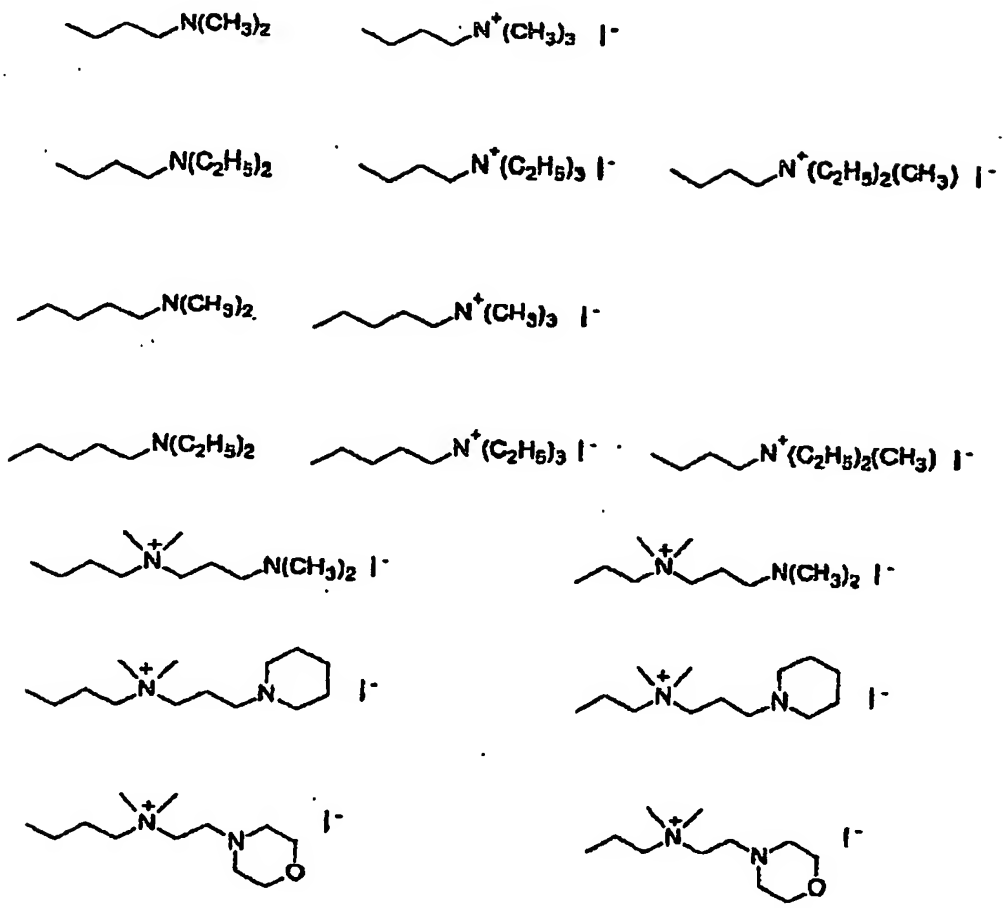
2. Compounds of general formula (I) according to claim 1, in which the said group R comprises at least one substituent bearing tertiary or quaternary nitrogen.

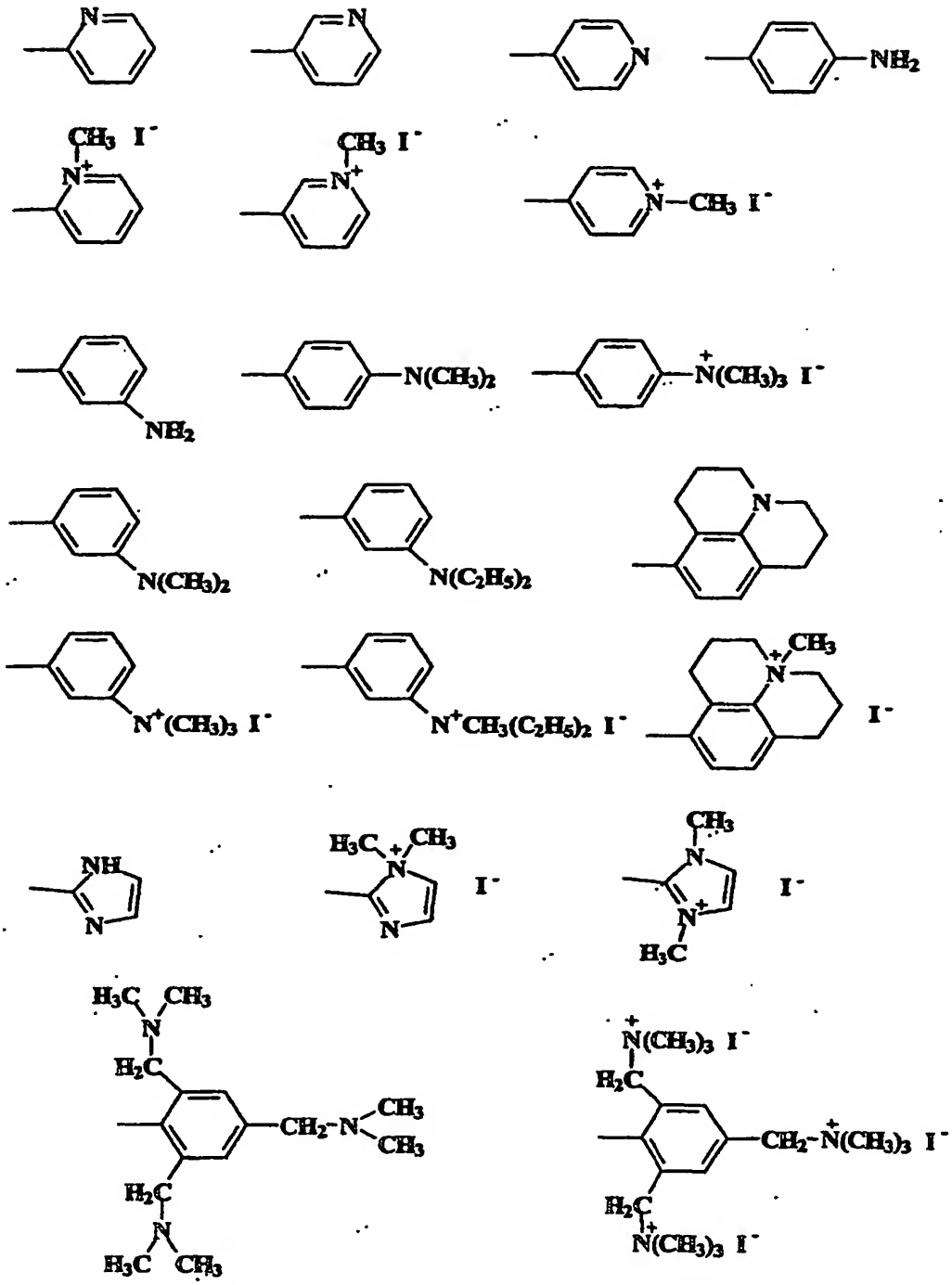
3. Compounds of general formula (I) according to claim 1, wherein said saturated or unsaturated heterocycle, possibly substituted, is selected from the group consisting of morpholine, piperidine, pyridine, pyrimidine, piperazine, pyrrolidine, pyrroline, imidazole, aniline and julolidine (2,3,6,7-tetrahydro-1H,5H-pirido[3,2,1-*ij*] quinoline).

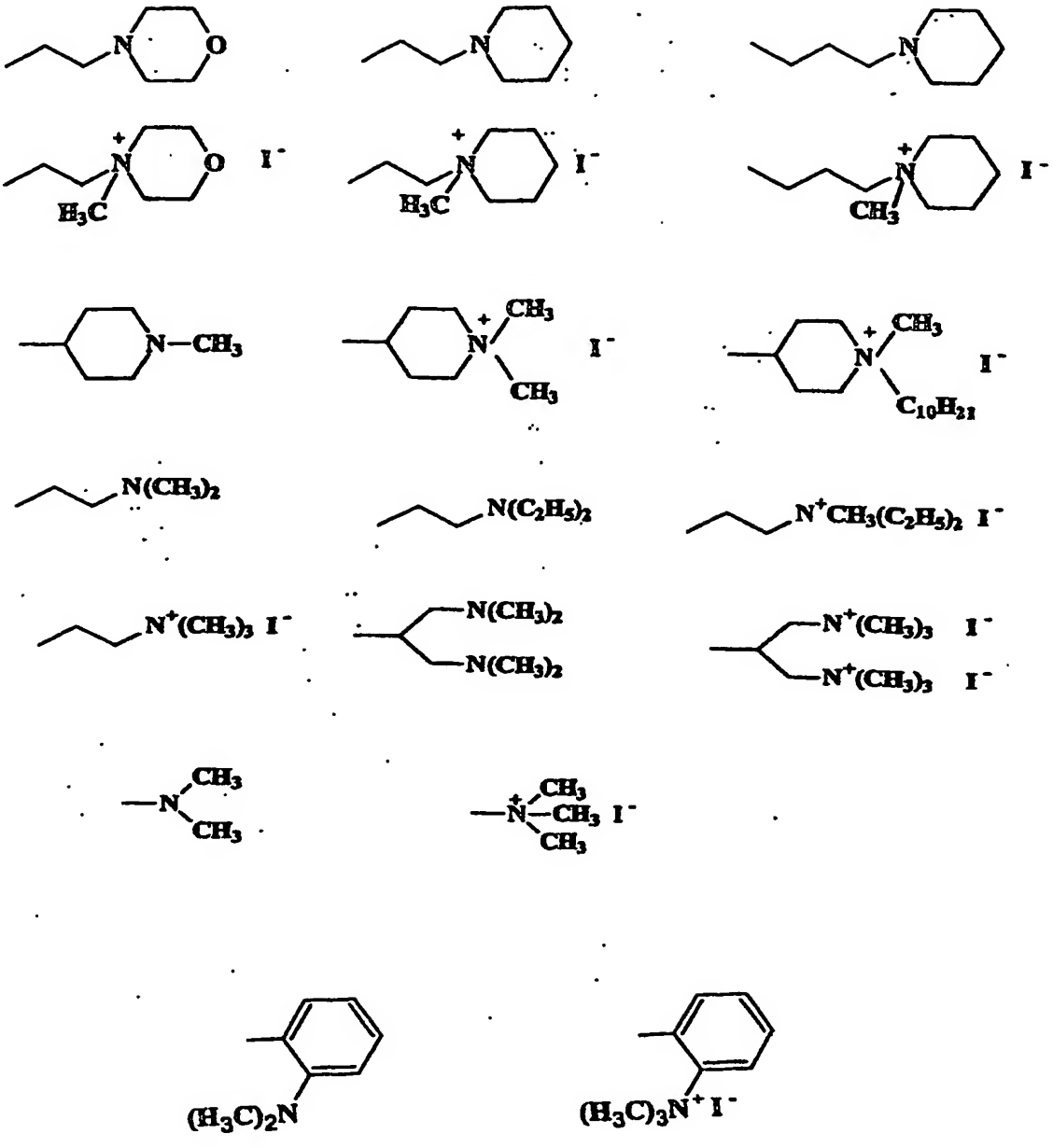
4. Compounds of general formula (I) according to claim 1, wherein the group



is selected from the group consisting of:







5. Compounds of general formula (I) according to claim 1, selected from the group consisting of:

5,10,15-tris-[4-(2-N,N,N-trimethylammoniumethoxy)-phenyl]-20-[(4-decyloxy)-phenyl] porphyrin triiodide,

5,10,15-tris-[4-(2-N,N,N-trimethylammoniumethoxy)-phenyl]-20-[(4-decyloxy)-phenyl]porphyrinate zinc (II) triiodide,

5,10,15-tris-[4-(2-N,N-dimethylaminoethoxy)phenyl]-20-[(4-decyloxy)phenyl] porphyrin],

5,10,15-tris-[4-(2-N,N-dimethylaminoethoxy)-phenyl]-20-[(4-decyloxy)phenyl] porphyrinate zinc (II),

5,10,15-tris-{[4-(N-methylpiperidin-4-yl)oxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin,

5,10,15-tris-{[4-(N,N-dimethylpiperidin-4-ium)oxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin triiodide,

5,10,15-tris-[3-(2-morpholin-4-ylethoxy)phenyl]-20-[(4-decyloxy)phenyl]porphyrin,

5,10,15-tris-{[3-(2-methylmorpholin-4-ium)ethoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin triiodide,

5,10,15-tris-{4-[4-(N,N-dimethylamino)phenoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin,

5,10,15-tris-{4-[4-(N,N,N-trimethylammonium)phenoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin triiodide,

5,10,15-tris-{4-[3-(N,N-dimethylamino)phenyl]thiophenyl}-20-[(3-undecyloxy) phenyl] porphyrin,

5,10,15-tris-{4-[3-(N,N,N-trimethylammonium)phenyl]thiophenyl}-20-[(4-undecyloxy) phenyl]porphyrin triiodide,

5,10,15-tris-[3-(3-N,N-dimethylaminopropoxy)phenyl]-20-[(3-undecyloxy) phenyl] porphyrin,

5,10,15-tris-[3-(3-N,N,N-trimethylammoniumpropoxy)phenyl]-20-[(3-undecyloxy) phenyl] porphyrin triiodide,

5,10,15-tris-{4-[4-(N,N-dimethylamino)butoxy]phenyl]-20-[(4-undecyloxy) phenyl] porphyrin,

5,10,15-tris-{4-[4-(N,N,N-trimethylammonium)butoxy]phenyl}-20-[(4-undecyloxy) phenyl]porphyrin triiodide,

5-{4-{2,4,6-tris-[(dimethylamino)methyl]phenoxy}phenyl}-10,15,20-tris-[(4-decyloxy) phenyl] porphyrin,

5-{4-{2,4,6-tris-[(trimethylammonium)methyl]phenoxy}phenyl}-10,15,20-tris-[(4-decyloxy) phenyl]porphyrin triiodide,

5-{3-[2-(dimethylamino)]-1-{[(dimethylamino)methyl]ethoxy}phenyl}-10,15,20-tris-[(3-decyloxy)phenyl]porphyrin,

5-{3-[2-(trimethylammonium)]-1-{[(trimethylammonium)methyl]ethoxy} phenyl}-10,15,20-tris-[(3-decyloxy)phenyl]porphyrin diiodide,

5,10,15-tris-{4-[3-(diethylamino)propoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin,

5,10,15-tris-{4-[3-(trimethylammonium)propoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin triiodide,

5,10,15-tris-[4-(2-aminoethoxy)phenyl]-20-[(4-decyloxy)phenyl] porphyrin,

5,10,15-tris-{[4-(2-trimethylammonium)ethoxy]phenyl}-20-[(4-decyloxy) phenyl] porphyrin triiodide,

5,10,15-tris-{{[4-(N,N,N-trimethylammonium)phenoxy]carbonyl}phenyl}-20-[(4-decyloxy) phenyl]porphyrin triiodide,

5-{4-{{2-(trimethylammonium)-1-[(trimethylammonium)methyl]ethoxy} carbonyl}phenyl}-10,15,20-tris-[(3-decyloxy)phenyl]porphyrin diiodide,

5,15-bis-[3-(3-N,N,N-trimethylammoniumpropoxy)phenyl] porphyrin diiodide,

5,15-bis-[4-(2-piperidin-1-ylethoxy)phenyl]porphyrin,

5,15-bis-[4-(2-N-methylpiperidin-1-iumethoxy)phenyl]porphyrin diiodide,

5,15-bis-[4-(3-N,N-dimethylaminopropoxy)phenyl]-10,20-bis-[(3-decyloxy)phenyl]porphyrin,

5,15-bis-[4-[3-N,N,N-trimethylammoniumpropoxy)phenyl]-10,20-bis-[(3-decyloxy)phenyl]porphyrin diiodide,

5,15-bis 4-{[2-(N,N-dimethylamino)ethylthio]phenyl}porphyrin,

5,15-bis-{4-[2-(N,N,N-trimethylammonium)ethylthio]phenyl}porphyrin diiodide,

5,15-bis-{4-{2-[3-(trimethylammonium)phenoxy]ethoxy}phenyl}porphyrin diiodide,

5,15-bis-{4-{2-[3-(N,N,N-trimethylammonium)phenyl]-2-oxoethyl}-10,20-bis-[(3-decyloxy)phenyl]porphyrin diiodide,

5,15-bis-[3-(3-N,N,N-trimethylammoniumpropoxy)phenyl]porphyrinate zinc(II) diiodide,
5,15-bis-[3-(3-N,N-dimethylaminopropoxy)phenyl]porphyrinate zinc(II),
5,15-bis-[4-(4-N,N,N-trimethylammoniumphenoxy)phenyl] porphyrin diiodide,
5,15-bis-[4-(4-aminophenoxy)phenyl]porphyrin,
5,15-bis-[3-(4-N,N-dimethylaminophenoxy)phenyl]porphyrin,
5,15-bis-[3-(4-N,N,N-trimethylammoniumphenoxy)phenyl]porphyrin diiiodide,
5,15-bis-[3-(4-N,N-dimethylaminophenyl)thiophenyl]porphyrin,
5,15-bis-[3-(4-N,N,N-trimethylammoniumthiophenoxy)phenyl]porphyrin diiiodide,
5,15-bis-4-[3-(N,N-dimethylaminophenoxy)phenyl]-10,20-bis-[(4-decyloxy) phenyl]porphyrin,
5,15-bis-4-[3-(N,N,N-trimethylammoniumphenoxy)phenyl]-10,20-bis-[(4-decyloxy) phenyl]porphyrin diiodide,
5,10,15-tris-{4-[4-(N,N-dimethylamino)butoxy]phenyl}-20-[(4-undecyloxy)phenyl] porphyrinate zinc(II),
5,10,15-tris-{4-[4-(N,N,N-trimethylammonium)butoxy]phenyl}-20-[(4-undecyloxy) phenyl]porphyrinate zinc(II) triiodide,
5,15-bis-[4-(2-piperidin-1-ylethoxy)phenyl]porphyrinate zinc(II), and
5,15-bis-[4-(2-N-methylpiperidin-1-iumethoxy)phenyl]porphyrinate zinc(II) diiodide.

6. Conjugates of compounds of general formula (I) as defined in claims 1-5 with a macromolecule selected from the group consisting of aminoacids, polypeptides, proteins and polysaccharides.

7. Process for the preparation of compounds of formula (I) in which $R = R_2 = R_3$ as defined in claims 1-5, selected from the group consisting of:

- pre-functionalization of suitable reagents with amino groups, followed by statistical synthesis of the porphyrin ring, possible modification of the amino groups in ammonium groups, and possible complexation with the metal cation if the metal complex is required;
- statistical synthesis with formation of the porphyrin ring followed by functionalization of the porphyrin with the present amino or ammonium groups, and possible complexation with the metal cation; and

- synthesis of the porphyrin ring through suitable dipyrromethane derivatives followed by functionalisation of the porphyrin with the present amino or ammonium groups, and possible complexation with the metal cation.

8. Process for the preparation of compounds of formula (I) in which R = R_2 and R_1 = R_3 as defined in claims 1-5, comprising the synthesis of the porphyrin ring through dipyrromethane followed by functionalisation of the porphyrin with aliphatic or aromatic amino or ammonium groups, and possible complexation with the metal cation if the metal complex is required.

9. Intermediate compounds in the preparation of compounds of formula (I) as defined in claims 1-5, selected from the group consisting of:
5,10,15-tris-[4-(2-hydroxyethoxy)phenyl]-20-[(4-decyloxy)phenyl]porphyrin,
5,10,15-tris-[4-(2-methylsulphonylethoxy)phenyl]-20-[(4-decyloxy)phenyl]porphyrin,
5,15-bis-[3-(3-hydroxypropoxy)phenyl]porphyrin,
5,15-bis-[3-(3-methylsulphonylpropoxy)phenyl]porphyrin,
5,15-bis-[3-(3-hydroxypropoxy)phenyl]porphyrinate zinc(II),
5,15-bis-[3-(3-methylsulphonylpropoxy)phenyl]porphyrinate zinc(II),
5,15-bis-{[3-(3-(4-methylphenyl)sulfonyl)oxy]propoxyphenyl}porphyrinate zinc(II),
5,15-bis-[3-(3-bromopropoxy)phenyl]porphyrinate zinc(II), and
5,15-bis-[4-(4-nitrophenoxy)phenyl]porphyrin.

10. Pharmaceutical compositions comprising as the active principle at least a compound of general formula (I) as defined in claims 1-5, or a conjugate according to claim 6, or mixtures thereof, possibly in combination with pharmaceutically acceptable excipients and/or diluents.

11. Use of compounds of general formula (I) as defined in claims 1-5, or of conjugates thereof according to claim 6, for the preparation of pharmaceutical compositions for photodynamic therapy.

12. Use of compounds of general formula (I) or of conjugates thereof according to claim 11, for the preparation of pharmaceutical compositions for the treatment of bacterial, viral or micotic infections.

13. Use of compounds of general formula (I) or of conjugates thereof according to claim 11, for the preparation of pharmaceutical compositions for the treatment of diseases characterised by cellular hyperproliferation.

14. Use of compounds of general formula (I) according to claim 13, wherein said diseases characterised by cellular hyperproliferation are selected from the group consisting of psoriasis, intimal hyperplasia, benign prostate hyperplasia and atheromas.

15. Diagnostic agents comprising as the active principle a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, possibly in combination with a pharmaceutically acceptable carrier.

16. Sterilizing agents comprising as the active principle a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, possibly in combination with a pharmaceutically acceptable carrier.

17. Use of a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, for blood and blood derivatives sterilisation.

18. Use of a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, for the preparation of a pharmaceutical composition for the sterilisation of wounds.

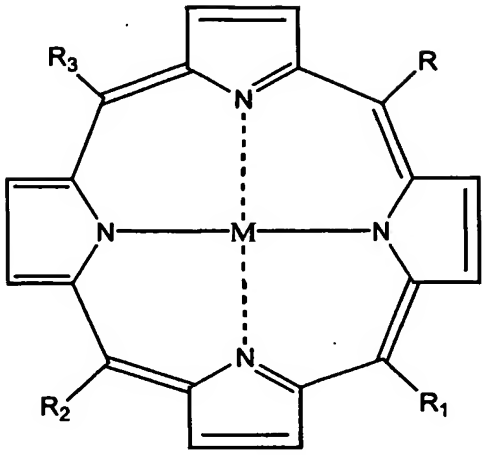
19. Method of treating infectious diseases of viral, fungine and bacterial origin, diseases characterised by cellular hyperproliferation and dermatological diseases, comprising administering to a patient in need of such a treatment an effective amount of at least a compound of general formula (I) as defined in claim 1 or a conjugate thereof according to claim 6, and irradiating the pathologically affected tissues with light of appropriate wavelength.

20. Method according to claim 19, wherein the said affected tissues are irradiated by visible red light radiation when the treatment of deep seated tumours on infections is required, and by blue visible radiation or white light radiation when treating psoriasis, actinic keratoses, basal cell carcinomas and other cancerous and pre-cancerous lesions of the skin and mucosas.

21. Method of localising pathologically affected areas comprising administering to a patient an effective amount of at least a compound of general formula (I) as defined in claim 1 or a conjugate thereof according to claim 6, and irradiating the pathologically affected areas with light of appropriate wavelength.

CLAIMS

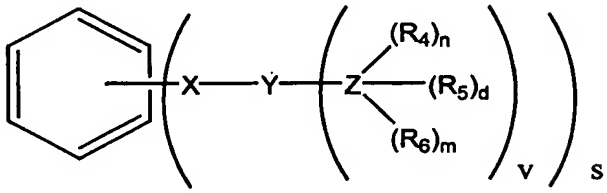
1. Compounds of general formula (I)



(I)

wherein

R is the following group of formula (II)



(II)

wherein

X is selected from the group consisting of O, S, CH_2, COO, CH_2CO, $O(CH_2)_2O$, $O(CH_2)_3O$ and N;

Z is selected from between N and CH_2N;

Y is selected from aliphatic groups, linear or branched, saturated or unsaturated, having from 1 to 10 carbon atoms, and phenyl, possibly substituted, or Y forms with Z a saturated or unsaturated heterocycle, possibly substituted, comprising up to two heteroatoms selected from the group consisting of N, O and S;

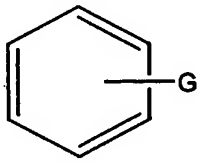
R_4 and R_5, equal or different from each other, are selected from H and alkyl groups having from 1 to 3 carbon atoms, or they form with the Z group a saturated or unsaturated heterocycle, possibly substituted, comprising up to two heteroatoms selected from the group consisting of N, O and S;

R_6 is selected from H and aliphatic groups, linear or branched, saturated or unsaturated, having from 1 to 5 carbon atoms, possibly substituted with alkylamine or alkylammonium groups having alkyl chains comprising from 1 to 5 carbon atoms, or forming a saturated heterocycle comprising up to two heteroatoms selected from between O and N;

d, m, and n, equal of different from each other, are selected from 0 and 1;

v and s, equal or different from each other, are integers comprised between 1 and 3;

R_1 is selected from H and a group of formula (III)



(III)

wherein

G is selected from H and P-$(CH_2)_l$-$(W)_f$-J, wherein

P is selected from the group consisting of O, CH_2, CO_2, NHCONH and CONH;

l is an integer comprised between 0 and 5;

W is selected from the group consisting of O, CO_2, CONH and NHCONH;

f is selected from between 0 and 1;

J is H or an alkyl group $(CH_2)_q$-CH_3, wherein q is an integer comprised between 0 and 20;

R_2 and R_3, equal or different from each other, are selected from between R and R_1, wherein R and R_1 are defined as above,

M is chosen from 2H and a metal selected from the group consisting of Zn, Mg, Pt, Pd, $Si(OR_7)_2$, $Ge(OR_7)_2$ and $AlOR_7$, wherein R_7 is chosen from between H and C1-C15 alkyl,

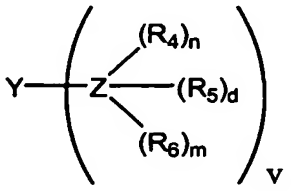
and pharmaceutically acceptable salts thereof.

2. Compounds of general formula (I) according to claim 1, in which the said group R comprises at least one substituent bearing tertiary or quaternary nitrogen.

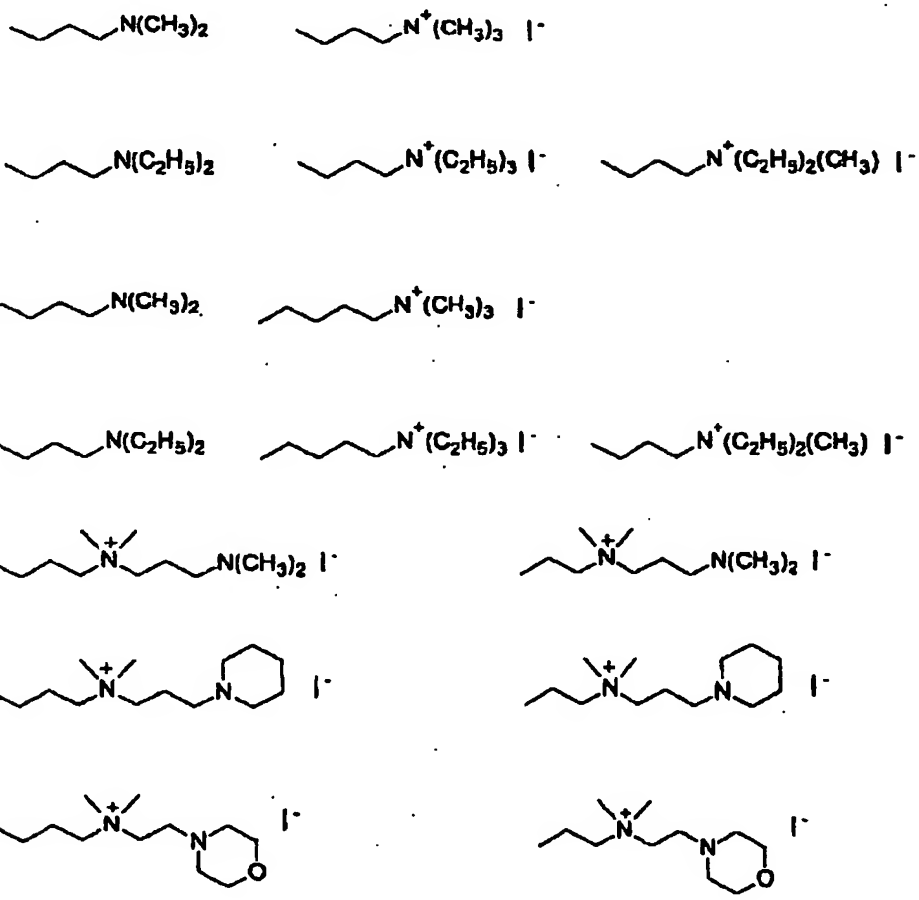
3. Compounds of general formula (I) according to claim 1, wherein said saturated or unsaturated heterocycle, possibly substituted, is selected from the group consisting of morpholine, piperidine, pyridine, pyrimidine, piperazine, pyrrolidine,

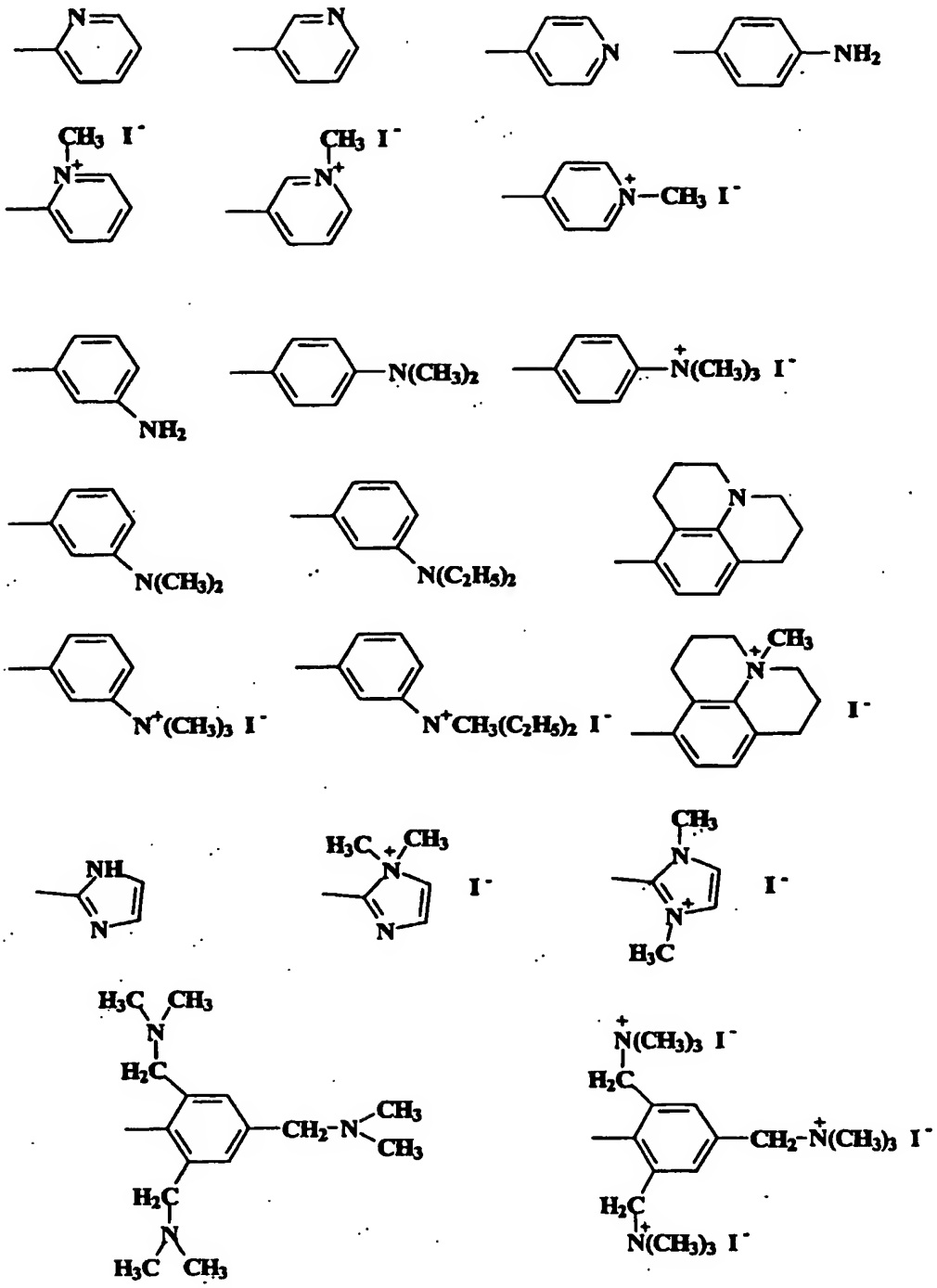
pyrroline, imidazole, aniline and julolidine (2,3,6,7-tetrahydro-1H,5H-pirido[3,2,1-*ij*] quinoline).

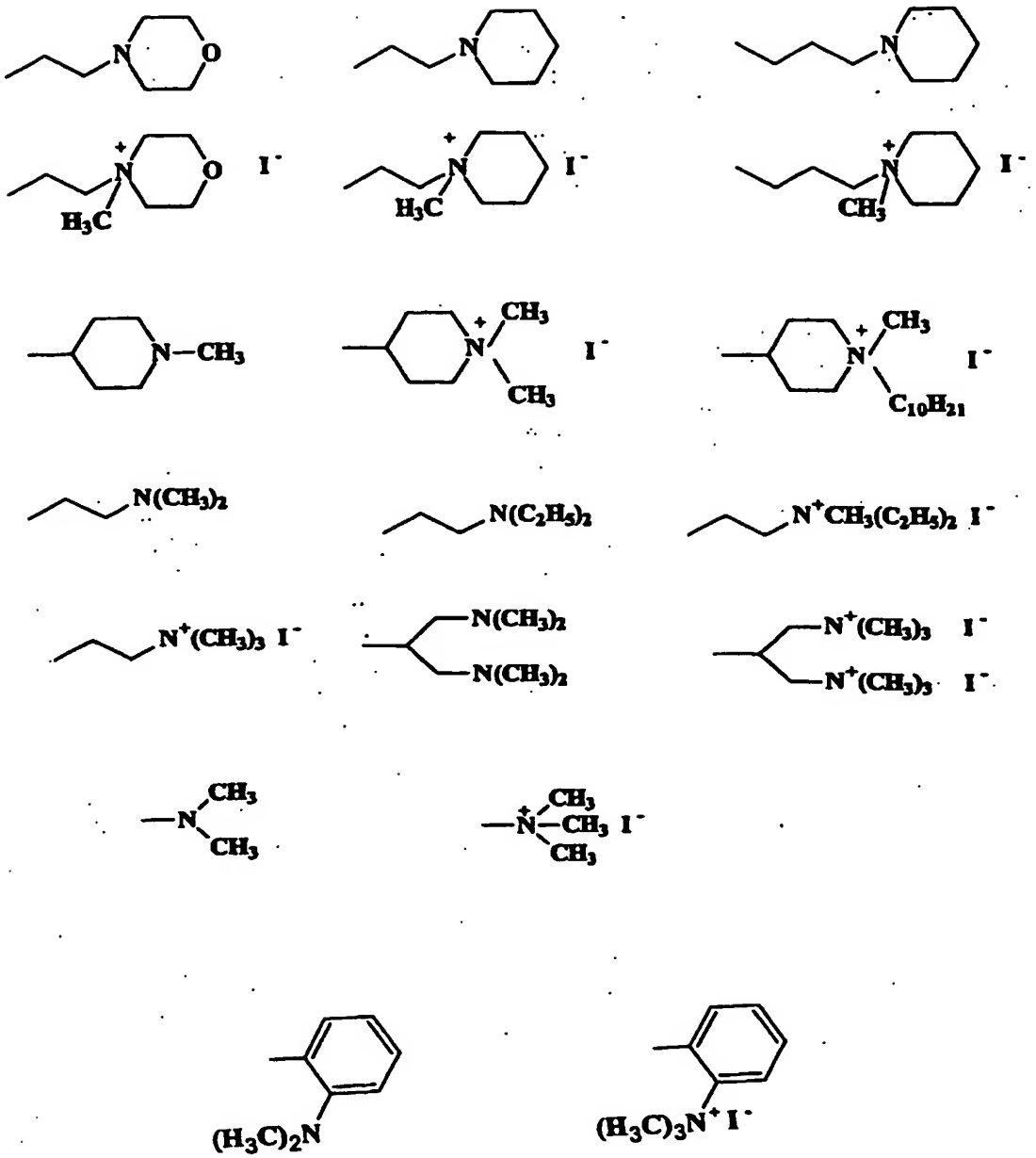
4. Compounds of general formula (I) according to claim 1, wherein the group



is selected from the group consisting of:







5. Compounds of general formula (I) according to claim 1, selected from the group consisting of:

5,10,15-tris-[4-(2-N,N,N-trimethylammoniumethoxy)-phenyl]-20-[(4-decyloxy)-phenyl]porphyrin triiodide,

5,10,15-tris-[4-(2-N,N,N-trimethylammoniumethoxy)-phenyl]-20-[(4-decyloxy)-phenyl]porphyrinate zinc (II) triiodide,

5,10,15-tris-[4-(2-N,N-dimethylaminoethoxy)phenyl]-20-[(4-decyloxy)phenyl] porphyrin],

5,10,15-tris-[4-(2-N,N-dimethylaminoethoxy)-phenyl]-20-[(4-decyloxy)phenyl] porphyrinate zinc (II),

5,10,15-tris-{[4-(N-methylpiperidin-4-yl)oxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin,

5,10,15-tris-{[4-(N,N-dimethylpiperidin-4-ium)oxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin triiodide,

5,10,15-tris-[3-(2-morpholin-4-ylethoxy)phenyl]-20-[(4-decyloxy)phenyl]porphyrin,

5,10,15-tris-{[3-(2-methylmorpholin-4-ium)ethoxy]phenyl}-20-[(4-decyloxy)phenyl]porphyrin triiodide,

5,10,15-tris-{4-[4-(N,N-dimethylamino)phenoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin,

5,10,15-tris-{4-[4-(N,N,N-trimethylammonium)phenoxy]phenyl}-20-[(4-decyloxy)phenyl]porphyrin triiodide,

5,10,15-tris-{4-[3-(N,N-dimethylamino)phenyl]thiophenyl}-20-[(3-undecyloxy) phenyl] porphyrin,

5,10,15-tris-{4-[3-(N,N,N-trimethylammonium)phenyl]thiophenyl}-20-[(4-undecyloxy) phenyl]porphyrin triiodide,

5,10,15-tris-[3-(3-N,N-dimethylaminopropoxy)phenyl]-20-[(3-undecyloxy) phenyl]porphyrin,

5,10,15-tris-[3-(3-N,N,N-trimethylammoniumpropoxy)phenyl]-20-[(3-undecyloxy) phenyl]porphyrin triiodide,

5,10,15-tris-{4-[4-(N,N-dimethylamino)butoxy]phenyl]-20-[(4-undecyloxy) phenyl]porphyrin,

5,10,15-tris-{4-[4-(N,N,N-trimethylammonium)butoxy]phenyl}-20-[(4-undecyloxy)phenyl]porphyrin triiodide,
5-{4-{2,4,6-tris-[(dimethylamino)methyl]phenoxy}phenyl}-10,15,20-tris-[(4-decyloxy)phenyl]porphyrin,
5-{4-{2,4,6-tris-[(trimethylammonium)methyl]phenoxy}phenyl}-10,15,20-tris-[(4-decyloxy)phenyl]porphyrin triiodide,
5-{3-[2-(dimethylamino)]-1-{[(dimethylamino)methyl]ethoxy}phenyl}-10,15,20-tris-[(3-decyloxy)phenyl]porphyrin,
5-{3-[2-(trimethylammonium)]-1-{[(trimethylammonium)methyl]ethoxy} phenyl}-10,15,20-tris-[(3-decyloxy)phenyl]porphyrin diiodide,
5,10,15-tris-{4-[3-(diethylamino)propoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin,
5,10,15-tris-{4-[3-(trimethylammonium)propoxy]phenyl}-20-[(4-decyloxy)phenyl] porphyrin triiodide,
5,10,15-tris-[4-(2-aminoethoxy)phenyl]-20-[(4-decyloxy)phenyl] porphyrin,
5,10,15-tris-{[4-(2-trimethylammonium)ethoxy]phenyl}-20-[(4-decyloxy) phenyl]porphyrin triiodide,
5,10,15-tris-{{[4-(N,N,N-trimethylammonium)phenoxy]carbonyl}phenyl}-20-[(4-decyloxy) phenyl]porphyrin triiodide,
5-{4-{{2-(trimethylammonium)-1-[(trimethylammonium)methyl]ethoxy} carbonyl}phenyl}-10,15,20-tris-[(3-decyloxy)phenyl]porphyrin diiodide,
5,15-bis-[3-(3-N,N,N-trimethylammoniumpropoxy)phenyl] porphyrin diiodide,
5,15-bis-[4-(2-piperidin-1-ylethoxy)phenyl]porphyrin,
5,15-bis-[4-(2-N-methylpiperidin-1-iumethoxy)phenyl]porphyrin diiodide,
5,15-bis-[4-(3-N,N-dimethylaminopropoxy)phenyl]-10,20-bis-[(3-decyloxy)phenyl]porphyrin,
5,15-bis-[4-[3-N,N,N-trimethylammoniumpropoxy)phenyl]-10,20-bis-[(3-decyloxy)phenyl]porphyrin diiodide,
5,15-bis 4-{[2-(N,N-dimethylamino)ethylthio]phenyl}porphyrin,
5,15-bis-{4-[2-(N,N,N-trimethylammonium)ethylthio]phenyl}porphyrin diiodide,
5,15-bis-{4-{2-[3-(trimethylammonium)phenoxy]ethoxy}phenyl}porphyrin diiodide,
5,15-bis-{4-{2-[3-(N,N,N-trimethylammonium)phenyl]-2-oxoethyl}-10,20-bis-[(3-decyloxy)phenyl]porphyrin diiodide,

5,15-bis-[3-(3-N,N,N-trimethylammoniumpropoxy)phenyl]porphyrinate zinc(II) diiodide,

5,15-bis-[3-(3-N,N-dimethylaminopropoxy)phenyl]porphyrinate zinc(II),

5,15-bis-[4-(4-N,N,N-trimethylammoniumphenoxy)phenyl] porphyrin diiodide,

5,15-bis-[4-(4-aminophenoxy)phenyl]porphyrin,

5,15-bis-[3-(4-N,N-dimethylaminophenoxy)phenyl]porphyrin,

5,15-bis-[3-(4-N,N,N-trimethylammoniumphenoxy)phenyl]porphyrin diiiodide,

5,15-bis-[3-(4-N,N-dimethylaminophenyl)thiophenyl]porphyrin,

5,15-bis-[3-(4-N,N,N-trimethylammoniumthiophenoxy)phenyl]porphyrin diiiodide,

5,15-bis-4-[3-(N,N-dimethylaminophenoxy)phenyl]-10,20-bis-[(4-decyloxy) phenyl]porphyrin,

5,15-bis-4-[3-(N,N,N-trimethylammoniumphenoxy)phenyl]-10,20-bis-[(4-decyloxy) phenyl]porphyrin diiodide,

5,10,15-tris-{4-[4-(N,N-dimethylamino)butoxy]phenyl}-20-[(4-undecyloxy)phenyl] porphyrinate zinc(II),

5,10,15-tris-{4-[4-(N,N,N-trimethylammonium)butoxy]phenyl}-20-[(4-undecyloxy) phenyl]porphyrinate zinc(II) triiodide,

5,15-bis-[4-(2-piperidin-1-ylethoxy)phenyl]porphyrinate zinc(II), and

5,15-bis-[4-(2-N-methylpiperidin-1-iumethoxy)phenyl]porphyrinate zinc(II) diiodide.

6. Conjugates of compounds of general formula (I) as defined in claims 1-5 with a macromolecule selected from the group consisting of aminoacids, polypeptides, proteins and polysaccharides.

7. Process for the preparation of compounds of formula (I) in which $R = R_2 = R_3$ as defined in claims 1-5, selected from the group consisting of:

- pre-functionalization of suitable reagents with amino groups, followed by statistical synthesis of the porphyrin ring, possible modification of the amino groups in ammonium groups, and possible complexation with the metal cation if the metal complex is required;
- statistical synthesis with formation of the porphyrin ring followed by functionalization of the porphyrin with the present amino or ammonium groups, and possible complexation with the metal cation; and

- synthesis of the porphyrin ring through suitable dipyrromethane derivatives followed by functionalisation of the porphyrin with the present amino or ammonium groups, and possible complexation with the metal cation.

8. Process for the preparation of compounds of formula (I) in which R = R_2 and R_1 = R_3 as defined in claims 1-5, comprising the synthesis of the porphyrin ring through dipyrromethane followed by functionalisation of the porphyrin with aliphatic or aromatic amino or ammonium groups, and possible complexation with the metal cation if the metal complex is required.

9. Intermediate compounds in the preparation of compounds of formula (I) as defined in claims 1-5, selected from the group consisting of:
5,10,15-tris-[4-(2-hydroxyethoxy)phenyl]-20-[(4-decyloxy)phenyl]porphyrin,
5,10,15-tris-[4-(2-methylsulphonylethoxy)phenyl]-20-[(4-decyloxy)phenyl]porphyrin,
5,15-bis-[3-(3-hydroxypropoxy)phenyl]porphyrin,
5,15-bis-[3-(3-methylsulphonylpropoxy)phenyl]porphyrin,
5,15-bis-[3-(3-hydroxypropoxy)phenyl]porphyrinate zinc(II),
5,15-bis-[3-(3-methylsulphonylpropoxy)phenyl]porphyrinate zinc(II),
5,15-bis-{[3-(3-(4-methylphenyl)sulfonyl)oxy]propoxyphenyl}porphyrinate zinc(II),
5,15-bis-[3-(3-bromopropoxy)phenyl]porphyrinate zinc(II), and
5,15-bis-[4-(4-nitrophenoxy)phenyl]porphyrin.

10. Pharmaceutical compositions comprising as the active principle at least a compound of general formula (I) as defined in claims 1-5, or a conjugate according to claim 6, or mixtures thereof, possibly in combination with pharmaceutically acceptable excipients and/or diluents.

11. Use of compounds of general formula (I) as defined in claims 1-5, or of conjugates thereof according to claim 6, for the preparation of pharmaceutical compositions for photodynamic therapy.

12. Use of compounds of general formula (I) or of conjugates thereof according to claim 11, for the preparation of pharmaceutical compositions for the treatment of bacterial, viral or micotic infections.

13. Use of compounds of general formula (I) or of conjugates thereof according to claim 11, for the preparation of pharmaceutical compositions for the treatment of diseases characterised by cellular hyperproliferation.

14. Use of compounds of general formula (I) according to claim 13, wherein said diseases characterised by cellular hyperproliferation are selected from the group consisting of psoriasis, intimal hyperplasia, benign prostate hyperplasia and atheromas.

15. Diagnostic agents comprising as the active principle a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, possibly in combination with a pharmaceutically acceptable carrier.

16. Sterilizing agents comprising as the active principle a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, possibly in combination with a pharmaceutically acceptable carrier.

17. Use of a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, for blood and blood derivatives sterilisation.

18. Use of a compound of general formula (I) as defined in claims 1-5, or a conjugate thereof according to claim 6, for the preparation of a pharmaceutical composition for the sterilisation of wounds.

19. Method of treating infectious diseases of viral, fungine and bacterial origin, diseases characterised by cellular hyperproliferation and dermatological diseases, comprising administering to a patient in need of such a treatment an effective amount of at least a compound of general formula (I) as defined in claim 1 or a conjugate thereof according to claim 6, and irradiating the pathologically affected tissues with light of appropriate wavelength.

20. Method according to claim 19, wherein the said affected tissues are irradiated by visible red light radiation when the treatment of deep seated tumours on infections is required, and by blue visible radiation or white light radiation when treating psoriasis, actinic keratoses, basal cell carcinomas and other cancerous and pre-cancerous lesions of the skin and mucosas.

21. Method of localising pathologically affected areas comprising administering to a patient an effective amount of at least a compound of general formula (I) as defined in claim 1 or a conjugate thereof according to claim 6, and irradiating the pathologically affected areas with light of appropriate wavelength.